DOCUMENT RESUME

ED 305 183 PS 017 908

AUTHOR Soken, Nelson; And Others
TITLE Intermodal Perception of Fully Illuminated and Point Light Displays of Dynamic Facial Expressions by 7-Month-Old Infants.
PUB DATE Apr 89
NOTE 9p.; Paper presented at the Biennial Meeting of the Society for Research in Child Development (Kansas City, MO, April 27-30, 1989).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Affective Behavior; *Auditory Perception; Auditory Stimuli; *Facial Expressions; *Infants; *Perceptual Development; Recognition (Psychology); *Visual Perception; Visual Stimuli
IDENTIFIERS *Intermodal Perception; *Stimulus Characteristics

ABSTRACT

This study considered two questions about infants' perception of affective expressions: (1) Can infants distinguish between happiness and anger on the basis of facial motion information alone? (2) Can infants detect a correspondence between happy and angry facial and vocal expressions by different people? A total of 40 infants of 7 months of age were shown two videotapes of happy and angry expressions side-by-side while a soundtrack that was affectively appropriate to one of the displays played from a centrally located speaker. Subjects participated in either a fully illuminated or a point light condition. The 12 experimental trials consisted of 6 films of angry expressions and 6 of happy expressions. Films were counter-balanced for lateral position and sound-specification. Observers recorded fixation times to left and right displays. Infants in the point light condition showed a reliable preference for the sound-specified display, which was significant for the second half of the 12-trial session. Infants in the fully illuminated condition showed no preference for the sound-specified display. Results suggest that facial motion information is sufficient for the perception of distinct happy and angry facial expressions, and that infants can detect correspondences between happy and angry affect expressed by different people. (RH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

ED305183

INTERMODAL PERCEPTION OF FULLY ILLUMINATED AND POINT LIGHT DISPLAYS OF DYNAMIC FACIAL EXPRESSIONS BY 7-MONTH-OLD INFANTS.

Nelson Soken, Lisa Smith, Cheri Bakic, and Anne Pick. Institute of Child Development, University of Minnesota, 51 E. River Rd., Minneapolis, Minnesota 55455.

Two questions about infants' perception of affective expressions were asked in this study. First, can infants distinguish between happy and angry on the basis of facial motion information alone? Second, can infants detect a correspondence between happy and angry expressed facially and vocally by different people? Seven month old infants were shown two videotapes of happy and angry expressions side-by-side while a soundtrack affectively appropriate to one display played from a centrally located speaker. The infants participated in either a fully illuminated (normally-lighted face) or a point light condition (moving dot display). In both conditions, the voice on the soundtrack was different from the actress that was seen and the content was not the same. Infants' fixation to the two displays were recorded by an observer. Infants in the point light condition showed a reliable preference for the sound specified display which was significant for the second half of the 12 trial session. In contrast, infants in the fully illuminated condition showed no preference for the sound specified display. The results suggest that facial motion information is sufficient for the perception of distinct facial expressions happy and angry. Furthermore, the point light results suggest that infants can detect correspondences between happy and angry affect expressed by different people. The nonsigificant results in the fully illuminated condition are discussed in terms of the visual and auditory information used for differentiating the expressions.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Nelson H. Soken

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

PS 01908

Aims:

a. To explore whether facial motion information alone is sufficient for young infants' discrimination of affective expressions, specifically, between happiness and anger.

b. To explore whether infants can detect a correspondence between happy and angry affect expressed facially and vocally by different people.

Method Subjects:

Forty 7-month-old infants participated in the experiment. Twenty infants participated in each of experimental conditions; thus, there were twenty subjects in the fully illuminated condition and another twenty subjects in the point light condition.

Materials:

The expressions happy and angry were videotaped under two conditions, fully illuminated and point light. One actress was seen talking and facially gesturing, while another actress was heard; what each actress said differed. Thus, there was common expressive content across the visual and auditory displays (i.e. happy faces and happy voices) but discrepant verbal content. Each of the edited videotapes were 1 minute in length.

Procedure:

Infants viewed happy and angry visual displays shown side-by-side, while one of the corresponding soundtracks was played from a centrally-located speaker. The 12 experimental trials consisted of 6 sound-specified angry and 6 sound-specified happy films counter-balanced for lateral position and sound-specification. One of two trained observers recorded fixation times to the left and right displays.

Results:

a. In the point light condition, the infants' overall mean looking time was greater for the sound-specified displays than for the silent displays and the difference approached statistical significance ($p < .083$).

SOUND-SPECIFIED: X = 262.71 seconds, SD = 38.32

SILENT DISPLAY: X = 242.81 seconds, SD = 35.53

b. In the fully illuminated condition, the infants' overall mean looking time was approximately equal for the sound-specified and silent display and the difference was not statistically significant.

SOUND-SPECIFIED: X = 253.31 seconds, SD = 66.26

SILENT DISPLAY: X = 254.00 seconds, SD = 55.56

c. Analyses were conducted on the infants' mean looking times to the sound-specified and silent displays for the first and second half of the experimental session. In the fully illuminated condition, there were no significant effects in either half of the experimental session. In the point light condition the difference in the looking times to the sound-specified displays displays in the second half of the session was significant ($p < .05$).

FULLY ILLUMINATED:

1st half: SOUND-SPECIFIED: X = 135.34, SD = 42.75

SILENT DISPLAY: X = 127.80, SD = 30.17

2nd half: SOUND-SPECIFIED: X = 117.97, SD = 41.47

SILENT DISPLAY: X = 126.20, SD = 44.36

POINT LIGHT:

1st half: SOUND-SPECIFIED: X = 129.15, SD = 23.22

SILENT DISPLAY: X = 130.34, SD = 23.81

2nd half: SOUND-SPECIFIED: X = 133.56, SD = 31.23

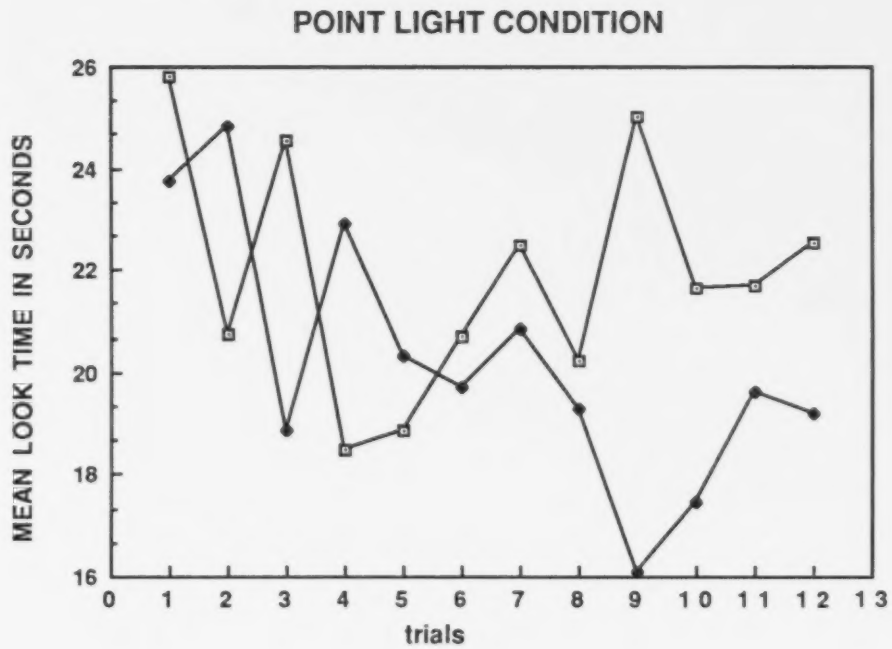
SILENT DISPLAY: X = 112.46, SD = 23.36

d. The pattern of results was consistent across the infants in the two conditions. Fifteen of the 20 infants in the point light condition looked longer, overall, at the sound-specified displays than at the silent displays ($p < .02$), whereas nine of the 20 infants in the fully illuminated condition looked longer, overall, at the sound-specified events.

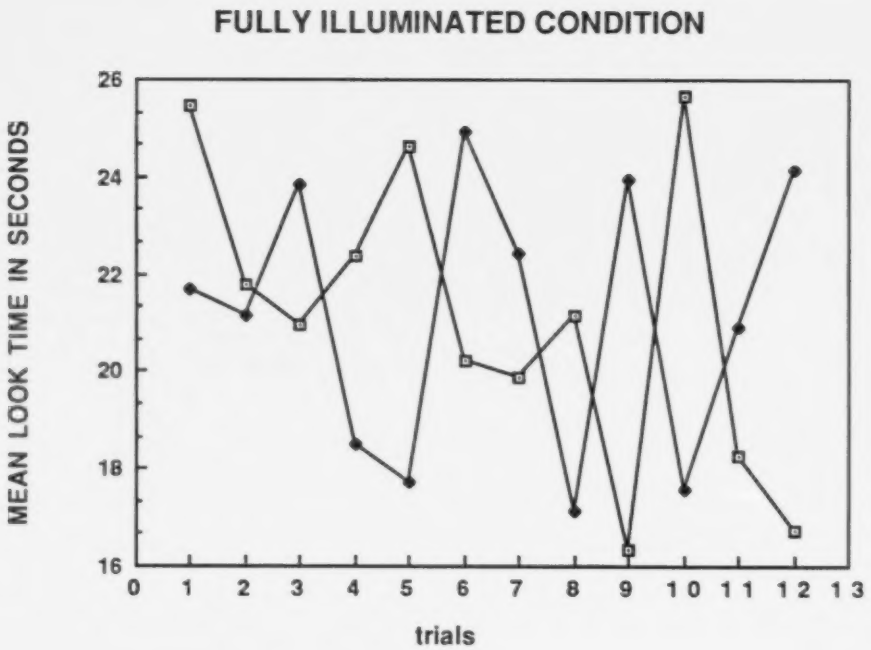
e. The looking times in the fully illuminated condition were significantly more variable than those in the point light condition for sound-specified displays and they approached statistical signficance for silent displays (sound-specified: $p < .05$; silent displays: $p < .10$).

f. In both conditions, infants looked significantly longer at the happy film, regardless of sound-specification (i.e. fully illuminated: $p < .005$; point light: $p < .018$).

g. In the fully illuminated condition, there was a significant right side preference ($p < .002$). Presently, there is not an explanation for this side preference.



Infants watching point light displays looked reliably longer at the sound-specified affective event, especially in the second half of the experimental session.



Infants watching fully illuminated displays did not look longer at the sound-specified affective event and their looking behavior was very variable.

Conclusions:

a. Infants' looking patterns in the point light condition demonstrate that seven-month-olds can distinguish between happy and angry affective expressions on the basis of motion information alone.

b. The results in the point light condition suggest that infants can detect a correspondence between happy and angry affect expressed by different people. Furthermore, the correspondences detected are higher-order, specific to happy and angry across person and content.

c. The infants' lack of preferential looking in the fully illuminated condition was unexpected, but further consideration suggests a plausible explanation. The correspondences of facial and vocal expressions that were available in the displays may be more difficult to detect in this condition as compared to the point light condition because of the additional information about discrepancies of facial and vocal expressions available in the former displays.

d. Future research directions include using displays that have more of the temporal correspondences ordinarily present in affect expressed facially and vocally preserved. Furthermore, a wider range of affective expressions shown in the point light format can be used to explore whether motion information specifies all expressions equally well and if particular facial areas are differentially important in infants' perception of different affective expressions.